



High performance architectural panels by Formica Group

Facade Guidelines



This booklet contains a compilation of some of the documents on nordicfacadesolutions.info

Please refer to nordicfacadesolutions.info for all relevant documents and the most recent versions of these documents.

This document is intended to provide general recommendations only. Formica Group provides these guidelines and all testing, code and design data for informational purposes only and strongly advises that the customer, project owner and architect seek independent advice from a qualified construction professional and/or engineer regarding application and installation as well as compliance with design requirements, applicable codes, laws and regulations, and test standards. (Local) Codes and applicable design and/or other requirements are to be checked prior to installation.

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Ventilated Facades

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General

VIVIX+® panels are installed as a component of rainscreen cladding or ventilated facade system. This “breathing” envelope system, employed the world over, can contribute a number of advantages to building designs.

Principle

Ventilated facade system is a complete facade solution and entails the fixing of panels on a sub-frame, which is fixed to the structural facade. A ventilated facade system consists of the following structural items:

Rainscreen and decorative facade

VIVIX+ panels cut to size are used as rainscreen and decorative facade, a building solution with both technical and aesthetic benefits. Joints between panels can remain open.

Cavity depth and ventilation

The free air cavity depth between the rainscreen cladding and the insulation or wall construction allows for ambient air to flow through from the ventilation inlets and outlets. For continuous ventilation behind the panel, a certain cavity depth between the rainscreen cladding and the insulation or wall construction is needed. The cavity depth as well as the minimum size of the ventilation inlets and outlets must be in accordance with applicable building standards, regulations and certificates.

Insulation (optional)

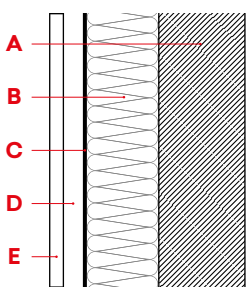
Ventilated facades have a space between the cladding and the construction - an ideal location for insulation materials. Rain water and condensation are removed naturally by air flowing through the cavity so that the insulation material remains in good condition and remains effective over time.

Sub-frame

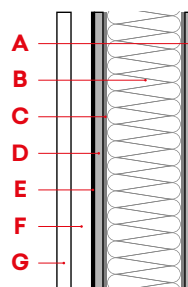
A ventilated facade can be constructed using different tested and certified fixing systems, each with their own advantages in terms of aesthetics (e.g. Visible fixing, joinery details), installation and performance, to fix VIVIX+ panels on a subframe.

Benefits

Ventilated facade systems as described above may result in a variety of advantages. First, the temperature difference between the face of the cladding and the air cavity behind creates a variation in air density and therewith draws air through the cavity, aiding in the removal of heat and moisture from rain or condensation. Second, the rainscreen blocks some solar gain and accommodates (continuous) insulation, considerably reducing air-conditioning demand. Third, these results are shown to improve comfort within occupied zones. Residents and users not only find themselves in a low-maintenance-environment, but the dry and comfortable conditions of the building may also make a positive contribution to indoor environmental quality (IEQ).



- Solid Wall**
- A Load bearing wall (concrete, masonry)*
 - B Thermal insulation*
 - C Weather barrier (vapour permeable)*
 - D Ventilation cavity and subframe**
 - E VIVIX+ rainscreen cladding



- Metal Stud**
- A Interior drywall*
 - B Thermal insulation*
 - C Metal stud / stud backing plate*
 - D Sheathing*
 - E Weather barrier (vapour permeable)*
 - F Ventilation cavity and subframe**
 - G VIVIX+ rainscreen cladding

* Not by Formica Group

** For details about ventilation cavity, subframe constructions and fixing systems please visit nordicfacadesolutions.info

General guidelines VIVIX+[®] facade cladding

The following aspects must be taken into consideration diligently when a facade construction consisting of VIVIX+ panels, sub-frames and fixings is designed, calculated and installed:

- VIVIX+ panels must be installed as a self-supporting facade cladding and should not carry a structural function.
- Do not suspend heavy objects from the panels without additional supports that go back through the panel to the construction behind. Hanging objects from the panel will change the way the panel moves and could impact the performance. This must always be avoided.
- The customer, project owner and/or architect must always seek independent advice from a construction professional regarding compliance to and with national and/or local (building) regulations. Formica Group does not make any representations as to the implications of using a specific use or fixing system and disclaims any and all liability or damages related thereto.
- Ensure the ventilated cavity is such that sufficient ventilation and drainage is ensured in order to prevent damage to the facades construction as a result of retained moisture.
- Ensure no special circumstances apply, in which case the panel strength and rigidity (when combined with the sub-frame) should not be sufficient to withstand normal loads such as wind, dead weight and/or impact, without being damaged.
- Have the installer ensure strength, stiffness, stability, flatness and durability of the total load bearing construction before the installation of the panels is started.

VIVIX+ panels must be fastened according to the guidelines of Formica Group and those of third party suppliers. Corrosion resistant fixings are to be used on a suitable sub-frame in such a way that the panels are not restrained and are able to move freely. When determining the type of sub frame to be used the following should be considered:

- Wind load;
 - Required ventilation provisions;
 - Unimpeded movement of the panels;
 - Applicable building standards, regulations, certificates or VIVIX+ technical support documentation with regards to technical installation details (e.g. panel dimensions, fixing distances, etc);
 - Thickness of exterior insulation material used, if any;
 - Anchoring possibilities in the load bearing wall (construction);
 - Local and national (building) code requirements.

Any modification to VIVIX+ panels or components thereof, its geometry or its specifications, and any use or installation of VIVIX+ panels or fixing system in combination with any material or component other than explained in Formica Group published documentation, shall be exclusively at the risk of the parties involved in such modification, use or installation, and each of such parties assumes all such risks.

Designing & installing VIVIX+[®] in specific variations

General

The following aspects must receive attention when designing and installing VIVIX+ panels.

- VIVIX+ panels feature a non-directional coloured surface. This means that VIVIX+ sheets when cut into smaller panels can be installed in any orientation.

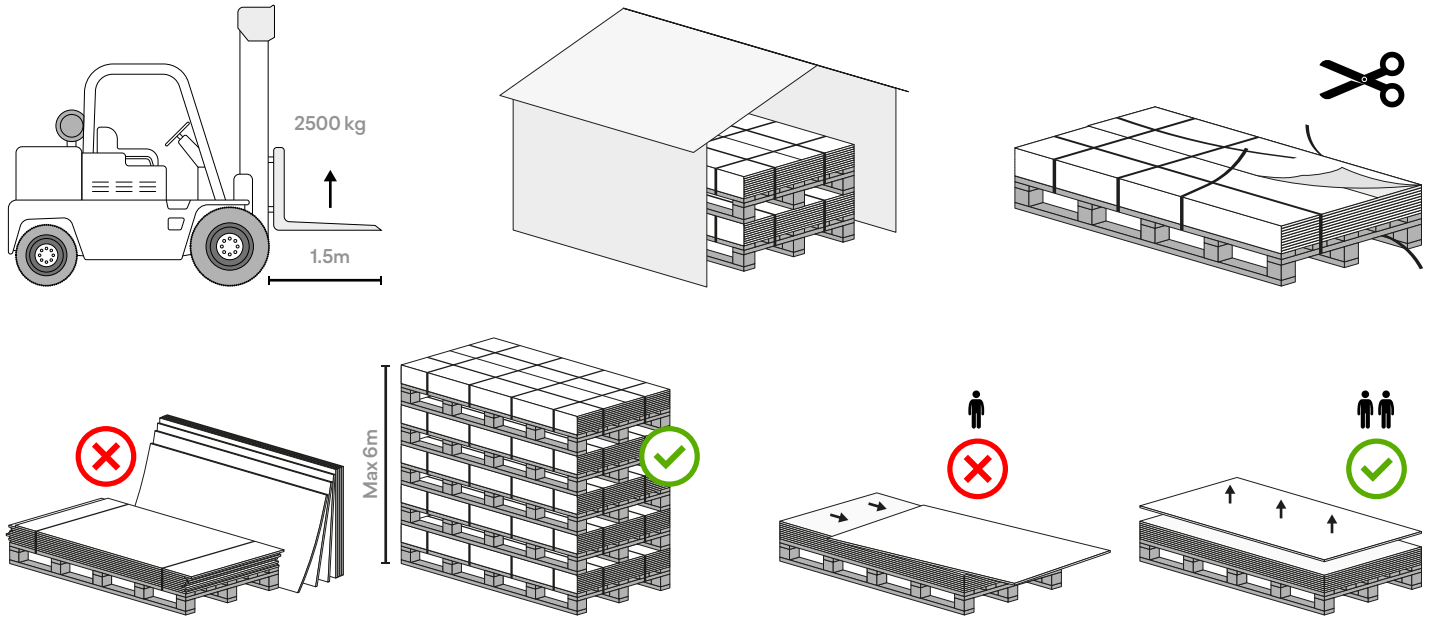
Full size panels

VIVIX+ panels are produced and supplied in fixed sizes as stated in Formica Group's Delivery Programme. Where applicable and in line with VIVIX+ installation guidelines, certificates, local building regulations and codes, full size panels may be installed to a facade. Please be aware that full size panels feature a squareness tolerance that must be considered when determining the maximum panel size to be installed. These tolerances differ and are dependent on the sheet size. In our Material Property Datasheet for VIVIX + panels, squareness tolerances are expressed in minimum and maximum diagonals. In order to create exact squareness, further machining might be necessary.

Transport, Handling and Storage

General

Handling and moving panels should only be undertaken by trained personnel using the correct equipment. VIVIX+® panels are decorative high-pressure compact laminates consisting of layers of wood-based fibres, impregnated with thermosetting resins. Panels should be handled with care to prevent damage to the decorative surface. Furthermore, treat the panels similar to treating hardwood.



Transport

- Use a proper forklift with a load capacity of at least 2500 kg and forks with a minimum length of 1.5 meters.
- Secure the panels with steel straps during transit.
- Fit protective corner sections under the straps.

Handling

- Treat panels with care.
- Do not slide panels. Lift panels when moving.
- Prevent dirt on and between the panels.
- Use adhesive stickers for marking / coding and remove immediately after installation.

Storage

- Store panels in a dry, clean, frost-free room.
- Maximum stack height = 6 m.
- Place pallets and panels on a level surface which provides full support.
- Keep panels in the original packaging.
- Remove steel straps if the panels are to be stored for a long time.
- Prevent a film of moisture from forming between the panels.
- Do not place any moisture-sensitive (paper) layers between the panels.
- Prevent unbalanced (one side only) moisture or temperature exposure by:
 - Leaving panels lying flat on top of each other.
 - Avoiding cavities between the panels e.g. due to panels having been machined.

Joints

The horizontal and vertical panel connections may either be open or closed and for each of these combinations special joint solutions exist. However, for all countries Formica Group strongly advises that the customer, project owner and architect seek independent advice from a construction professional regarding the accordance to national and/or local building regulations of joints solutions. In all cases, tolerances with respect to the panel, assembly and building itself play an important role in the joint details. Therefore, the following guidelines apply:

- Allow for free panel movement of 2.5 mm per metre in the length and in the width.
- Allow for at least 5 mm space around every single panel.
- Ensure a minimum joint width of 10 mm between two panels.
- Fit joints larger than 10 mm with grilles, insect mesh, etc. in accordance with applicable building standards, regulations and certificates to prevent insects and vermin getting in behind the facade cladding.
- Ensure joints allow for sufficient ventilation and drainage to prevent damage by retained moisture.

If an open joint system is used for vertical and/or horizontal joints, specific attention should be paid to possible rain or moisture penetration. To prevent the decrease in insulation performance, a vapour open foil can be used as an additional weather barrier. Consult the insulation manufacturer to determine the impact of moisture on the insulating material. Check with local building and fire codes to determine the impact of any additional weather barrier.

Horizontal joints

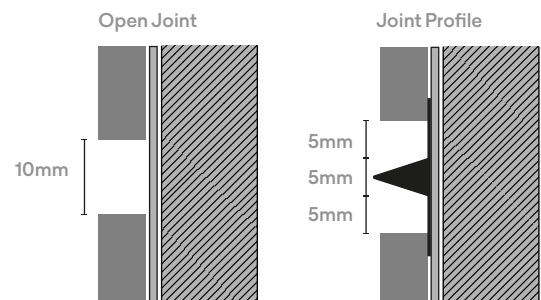
Three different horizontal joint solutions exist:

Joint profiles

Joints may be closed by fixing metal profiles which are available through third parties. The profiles should not impede the movement of the panels and should be fixed free of tension.

Joint gaskets

The use of a flat EPDM gasket to the full width of vertical battens is recommended with applicable fixing systems in accordance with applicable building standards, regulations and certificates. For more details please visit www.nordicfacadesolutions.info

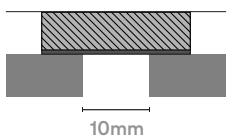


Note: Mastic joints impede the movement of the panels and may lead to excessive dirt on the panel edges. This type of joint sealing is therefore specifically not recommended.

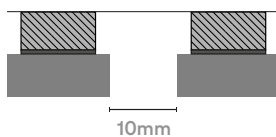
Vertical joints

Two different vertical joint solutions exist:

Closed Joint
(using EPDM gasket)



Open Joint
(using EPDM gasket)

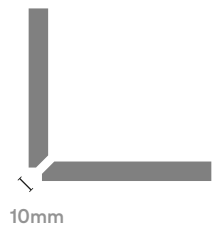


Corner Solutions

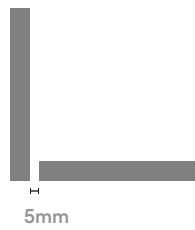
VIVIX+[®] panel connections at the corners of buildings may have either open or closed joints. Panels with a minimum thickness of 8 mm are suitable for a fixed corner connection where a metal corner profile is fixed to the back of the panel with screws or inserts.

Special allowances should be made for the differences in panel length. If one panel is not able to move in one or more directions, the width of the panel in question must not exceed 300 mm.

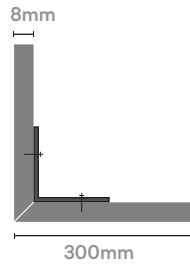
Open Corner



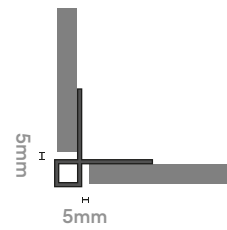
Open Corner



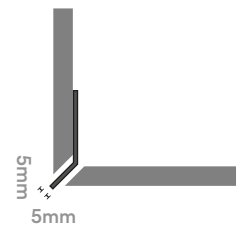
Fixed Corner



Corner Profile



Corner Profile





High performance architectural panels
by Formica Group



Horizontal exterior ceiling applications

VIVIX+® panels may be used as horizontal exterior ceiling applications (soffits). In addition to the technical installation details for vertical facade cladding, the provided fixing distances must be multiplied by 0.75 for horizontal use.

Please visit www.nordicfacadesolutions.info to find an overview of fixing systems commonly used in various countries or regions. Consult the technical details of a fixing system to check whether the fixing system can be used for installing soffits and the corresponding fixing distances.

Machining

General

Machining panels should only be done by a machining or construction professional with proper equipment. The homogeneous composition of the material makes it possible to machine both the sides and the surface. Machining VIVIX+[®] panels is comparable to machining high quality hardwood. VIVIX+ panels may be machined using carpentry tools. The hardness of VIVIX+ panels makes greater demands on tools than machining materials composed of softwood. The use of hard metal tools is advised. Diamond-tipped tools are recommended for large series. This ensures a very good finish and a long tool life.

Health and safety

Please note that serious dangers are inherent with the use of (carpentry) machinery. In all cases, adhere strictly to the guidelines of the machinery manufacturers and the recommendations of the safety and labour organisations.

Transport and handling

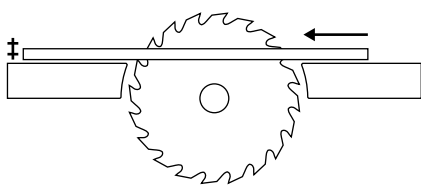
In general, lift the VIVIX+ panels and avoid sliding them as much as possible, also during transport and assembly.

Sawing

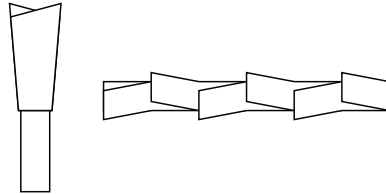
The following general guidelines apply to the sawing of VIVIX+ panels.

- **Feed:** 7 - 22 m/min
- **Tooth:** Alternate tooth or trapezoid flat tooth.
- **Positioning:** Entering tooth always at the decorative side of the VIVIX+ panel.
- **Cutting edges:** Best results are obtained with stationary machines. Any sharp edges can be removed with sandpaper or router.
- **Rake angle:** A rake angle of 45° gives the best performance.
- Use insert templates covered with rubber mats to prevent the VIVIX+ panels from sliding if the machine does not have a moving table top and/or if you are machining double-sided panels.

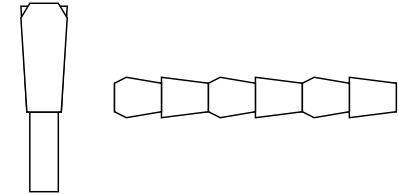
Saw-blade height setting



Alternate tooth



Trapezoid flat tooth



Stationary circular saw

Have the decorative side facing upwards when sawing, drilling and routing. When a decorative side must be slid over the machine's worktop while machining, it is recommended to place a protective panel, for example of hardwood, on the worktop.

Blade diameter (mm)	Teeth	Number of revolutions	Saw blade thickness (mm)	Saw blade height setting (mm)
300	72	≈ 6.000/min	3.4	30
350	84	≈ 5.000/min	4.0	35
400	96	≈ 4.000/min	4.8	40

Portable circular saw

When using a portable circular saw, the non-decorative side should be upwards.

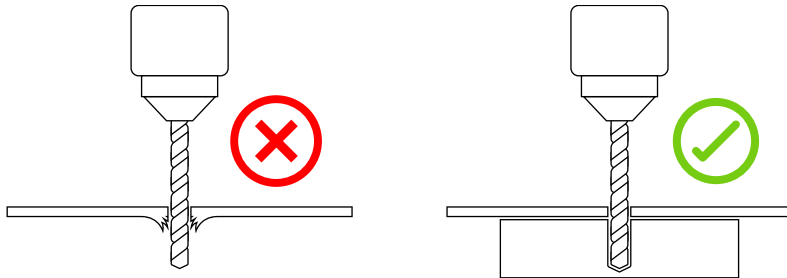
Blade diameter (mm)	Teeth	Number of revolutions	Saw blade thickness (mm)	Saw blade height setting (mm)
150	36	≈ 4.000/min	2.5	15
200	46	≈ 4.000/min	3.0	20

Jig saw

- Jig saw: carbide-tipped, interior corners of cut-outs should be drilled first with 8 - 10 mm (≈ 5/16 - 3/8 in) hole diameter.
- Consider the use of a specific jig saw blade for decorative surfaces.

Drilling

Carbide-tipped HSS-drill, top angle 60-80°. VIVIX+ panels should be drilled with support sheets.



Bit diameter (mm)	Number of Revolutions	Feed speed (m/min)
5	≈ 3.000/min	60 - 120
8	≈ 2.000/min	40 - 80
10	≈ 1.500/min	30 - 60

Large holes, e.g. for suspension and locking equipment, are to be drilled with combination drills without a centering point.

Routing

- Straight and slanted bits for cutting edges and bevelling.
- Hollow or round ground bits for rounded edges.
- Diamond groove-circular saw blades for grooves.

Material:

- Cutters made of hard metal or diamond.

Manually operated routing cutter or spindle moulder:

Bit diameter (mm)	Number of revolutions	Speed (m/s)	Feed (m/min)
20 - 25	≈ 18.000 - 24.000/min	20 - 30	5
125	≈ 6.000 - 9.000/min	40 - 60	5 - 15

Cleaning and Maintenance

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General

VIVIX+® panels have a closed surface that is virtually pore-free making it highly impenetrable to contamination. In addition, VIVIX+ panels are highly resistant to a large number of chemicals including many different non-aggressive and aggressive cleaning agents.

Although VIVIX+ panels require minimum maintenance, it is advisable to clean the panels after installation on site and at yearly intervals or whenever the windows are being cleaned thereafter, depending on the area, type of application and the care taken with processing and assembly.

Dirt prevention

Design considerations

The effect of dirt on decorative panels varies depending on the cause. An even layer of dust, for instance, is less obvious than streaks or patches caused by rainwater running off and leaving concentrated deposits of dust and dirt. Various construction solutions exist to prevent concentrated dirt marks e.g. by

- applying fitting overhangs with water deflecting edges;
- using flat-headed fast-fixing screws for VIVIX+ panels;
- ensuring that joints do not occur above the centre of another panel.

Construction considerations

Some dirt is bound to be generated during construction, but unnecessary soiling should be avoided:

- remove any labels or stickers immediately after installation;
- mask panel edges while frames are being painted;
- remove severe stains such as paint, cement or tar immediately.

Cleaning and repairing

VIVIX+ panels may not just be affected by dust, dirty handprints or algae growth. More serious problems such as soot coating, stubborn graffiti or accidents on site may occur. A wide range of special cleaning agents specifically for these types of staining are available through third parties. Do not use cleaning agents with abrasive or polishing components. Only use clean sponges, soft nylon brushes or cloths and avoid brushes with hard rigid bristles. Always follow the manufacturer's instructions closely. Recommended concentrations and soaking times should not be exceeded. Good cleaning results will depend on how well the contamination dissolves under the influence of the cleaning agent used. Some products, such as 2-component paint systems, polyurethane, silicone or other polymers, do not dissolve, making them very difficult to remove. Incomplete removal or removal with an unsuitable product may create a permanent film on the panels. This residue may cause an uneven discolouration of the surface. Formica Group warranties do not apply in case of improper or incorrectly performed cleaning. For the use of any cleaning agent, please consider (national) safety and environmental regulations.

Shoe-polish, crayons, pencil and chalk

Even stubborn marks such as shoe polish and children's crayons are easy to clean from panels using an organic solvent. Rinse the panels with water and wipe to prevent streaks. Location codes written in pencil or chalk and those which are exposed to the weather for long periods of time are more difficult to remove.

Paint

Remove solvent based paint with an organic solvent. Rinse or wipe the panels to avoid streaks. Remove two-component paint immediately with water and/or an organic solvent. Once this type of paint has dried it cannot be removed.

Adhesives, mastic and synthetic resins

When using adhesives, mastic or synthetic resins always consult the manufacturer's instructions. Not only for the execution instructions but also to determine whether the product is suitable to achieve the desired cleaning result. Remove solvent-based products with an organic solvent. Then rinse and/or wipe to avoid streaking. Remove two-component adhesive or synthetic resin immediately with water and/or an organic solvent. Silicon mastic should be rubbed off with a dry clean cloth and any residues removed with a silicon remover. Once these products have dried, they cannot be removed.

Traces of cement and lime

These should be removed with concentrated acid cleaning agents (i.e. hydrochloric acid), then rinse the panels thoroughly with clean water and wipe them dry.

Grease and grime

Over time, rain, wind, traffic and industrial pollution will deposit a light to medium layer of dirt on panel surfaces. Depending on the degree of dirt deposited, the panels can be cleaned at yearly intervals, whenever the windows are being cleaned or longer using a window cleaning agent.

Dust, splashes of mud, oil, greasy and dirty handprints are easy to remove by washing the panels with a universal household cleaning agent. Rinse and/or wipe the panels after washing to avoid streaks.

Green growth

Algae and mosses thrive on surfaces which stay mostly cool and damp and are rarely exposed to direct sunlight. The closed surface of VIVIX+ panels, however prevents them from penetrating the surface, making them easy to wipe off.

Graffiti

VIVIX+ has a closed surface that is virtually pore-free preventing paint, varnish, adhesive, ink and other graffiti materials from penetrating. The offending items can be easily removed if they are soluble in water, otherwise use organic solvent or special graffiti cleaner. Avoid streaks by rinsing the panel and wiping dry.

Damage

Should the surface of VIVIX + be scratched through vandalism, this may in many occasions be repaired by applying a small amount of acrylic paint with a fine brush to the scratches. . Any panels which are accidentally broken should be replaced.

Fixing Systems

VIVIX+[®] panels bring compelling aesthetic and nearly limitless design possibilities to next-generation architectural claddings. Use VIVIX+ panels on their own or in combination with other materials, to create stunning facades or highlights.

To suit your special requirements, VIVIX+ panels can be applied in a number of ways, using a number of joinery details and fixing systems. Choice of fixings and availability per country is dependent on relevant building codes and national certifications. For information on possible fixing systems in your region and more detailed technical information, visit www.nordicfacadesolutions.info

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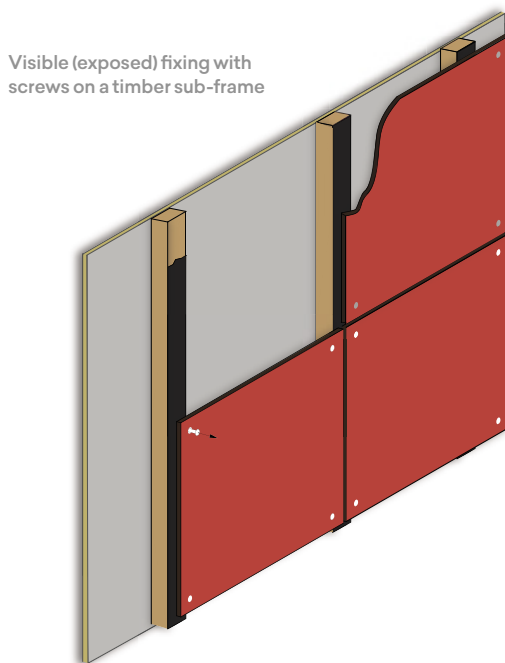
The following fixing methods are available:

- Visible Fixing (Exposed Fixing)
- Deep Cavity Fixing (Insulated Fixing)

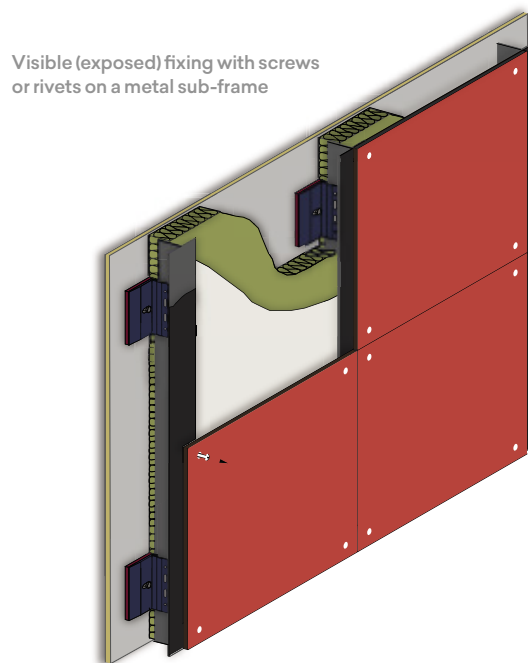
Visible fixing

- VIVIX+ can be visibly (i.e. exposed) fixed by using screws
- and a timber sub-frame or using rivets or screws on a metal sub-frame.
- System descriptions, can be found at www.nordicfacadesolutions.info

Visible fixing (exposed fixing)



Visible (exposed) fixing with screws on a timber sub-frame



Visible (exposed) fixing with screws or rivets on a metal sub-frame

Deep cavity fixing

In order to allow for thicker insulation packages in combination with metal-stud load-bearing walls, extensions for metal sub-frames are available.

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